

WHAT IS CLAIMED:

1 1. A method for registering a new subscriber in a
2 radio system having a central system and a plurality of
3 subscribers, said central system and said subscribers
4 comprise a transmission and a receiving device, said
5 subscribers can establish direct radio contact with the
6 central system or indirect contact via one or more other
7 subscribers as routers, said method for registering
8 comprising the following steps:

9 -a new subscriber sends a search signal to all
10 subscribers that can be reached and selects a first
11 router from subscribers that respond;

12 -the new subscriber sends a registration request to
13 the first router in the form of a message, said message
14 contains a provisional address and an identifier of the
15 central system assigned to the first router;

16 -after the registration request from the first
17 router has been forwarded to the central system, the
18 central system decides whether to accept or reject the
19 registration request, and

20 -if accepted, the central system sends a response
21 via the first router which contains a subscriber number
22 and a system identifier which is accepted and stored by
23 the new subscriber.

1 2. A method in accordance with Claim 1, wherein if
2 the registration request is rejected by the central
3 system, the new subscriber selects another first router
4 of another radio cell and sends a registration request
5 via this router to its central system.

1 3. A method in accordance with Claim 1, wherein
2 after the new subscriber sends the search signal and the
3 subscribers located within range respond by sending their
4 address and an identifier of their system to the new
5 subscriber, the new subscriber stores the addresses and
6 the associated system identifications in a list of
7 potential routers, for which it defines the order in
8 accordance with a prespecified evaluation algorithm, and
9 the new subscriber selects its first router from the list
10 in accordance with its order and if its registration
11 request is rejected by the system of the first router,
12 selects a further router in each case in accordance with
13 the prespecified order of the list for sending the
14 registration request again.

1 4. A method in accordance with Claim 3, wherein
2 the new subscriber defines the order of potential routers
3 on its list in accordance with the strength of the
4 response signal.

1 5. A method in accordance with Claim 3, wherein
2 the new subscriber first checks whether a central system
3 is responding to its search telegram and that in this
4 case it puts the central system at the top of its list.

1 6. A method in accordance with Claim 3, wherein
2 the new subscriber defines for the order of its list of
3 potential routers how many hierarchy stages away each
4 responding system is from its central system.

1 7. A method in accordance with Claim 3, wherein
2 the new subscriber evaluates the system identifiers of
3 the responding subscribers for the order of its list.

1 8. A method in accordance with Claim 1, wherein
2 the new subscriber, after a successful registration,
3 sends out a second search signal to all subscribers
4 located within its radio range and subsequently informs
5 the central system about all subscribers that can be
6 reached in its radio range of radio system.

7 9. A method in accordance with Claim 8, wherein
8 the new subscriber notifies the central system about the
9 field strength with which it is receiving the signals
10 from the subscribers that it can reach, and the central
11 system creates from this data an optimum system
12 configuration for transmission of messages via routers
13 and notifies the subscribers of the radio system of this
14 configuration.

1 10. A method in accordance with Claim 1, wherein
2 the telegrams of the new subscriber in each case with
3 their provisional address, are forwarded in precisely the
4 same way as the telegrams with a unique address, in which
5 case on the way to the central system the routers of the
6 subscribers through which the messages pass are marked so
7 that the response from the central system to the
8 registering subscriber travels back on the same path.

1 11. A method in accordance with Claim 10, wherein
2 the subscribers through which the messages pass are
3 marked by collecting their relevant addresses in the
4 forwarded telegram.

1 12. A method in accordance with Claim 10, wherein
2 the subscribers through which the messages pass are
3 marked by an identifier which allows routing with
4 distributed lists.